

REMARKS

Claims 1-55 remain pending in the present application. Applicant has amended Claims 1, 7, 9, 10, 14, 15, 17, 21, 25, 26, 28, 32, 37, 38, 44, and 46 to clarify claimed subject matter and/or correct informalities. The specification and drawings support these claim amendments at least at pages 6, 8-14, and in Figures 1, 2, 9, and 10. Therefore, these revisions introduce no new matter.

Claims 1-55 remain pending upon entry of the present Amendment. Applicant requests favorable consideration of this response and allowance of the subject application based on the following remarks.

Claim Objections

Claims 7, 9, 21, 32, and 44 are objected to because of informalities: Applicant has amended Claims 7, 9, 21, 32, and 44 to correct informalities as requested by the Office. Thus, these objections are now moot.

Claim Rejections 35 U.S.C. §112, 2nd paragraph

Claims 1, 14, 25, 37, and 46 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2-13, 15-24, 26-36, 38-45, and 47-55 depend directly or indirectly on one of independent Claims 1, 14, 25, 37, and 46, and are also rejected.

To advance the prosecution of this application, Applicant has amended **independent Claim 1**, to clarify claimed subject matter. Claim 1 as amended, now recites:

A method for face modeling and identification of facial features, comprising:

determining outer and inner facial features of a face model;

initializing outer and inner facial features of the face model by taking images of a face to correspond to:

that of a first model for a first face image of the face in a frontal position; and

that of a second model for a second face image of the face moving in a yaw direction, wherein the first and second face images are pictures taken at substantially the same respective camera orientation;

matching outer and inner facial features by a correlation between the first face image and the second face image;

adjusting the matching outer and inner facial features of the first and the second models using the corresponding epipolar constraint for the first and the second models for a more accurate correlation of facial features between the first face image and the second face image; and

identifying facial features for face recognition.

Support for the claim amendments may be found at least at pages 8-14, in Figures 1, 2, 9 and 10. Thus, no new matter has been introduced.

Independent Claims 14, 25, 37, and 46 have been amended along the same lines as Claim 1 and hence benefit from the same arguments. **Dependent Claims 2-13, 15-24, 26-36, 38-45, and 47-55** depend directly or indirectly on one of independent Claims 1, 14, 25, 37, and 46, and thus are allowable as depending from an allowable base claim. Applicant respectfully submits that these claims now comply with 35 U.S.C. §112, second paragraph and as a result the rejections are now moot.

Claim Rejections 35 U.S.C. §102

Claims 1-4, 6, and 12-13 are rejected under 35 U.S.C. §102(b) as being anticipated by non-patent literature titled "Model-based Head Pose Tracking With Stereovision" by Yang et al., Fifth IEEE International Conference on Automatic Face and Gesture Recognition, 2002,

page 242-247 (hereinafter "Yang"). Applicant respectfully traverses this rejection. Anticipation under §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference (MPEP §2131).

Without conceding the propriety of the stated rejections, and only to advance the prosecution of this application, Applicant amended **independent Claim 1**, to clarify further features of the subject matter (shown above). Claim 1 recites in part:

...initializing outer and inner facial features of the face model by taking images of a face to correspond to:

that of a first model for a first face image of the face in a frontal position; and

that of a second model for a second face image of the face moving in a yaw direction, wherein the first and second face images are pictures taken at substantially the same respective camera orientation;

...
identifying facial features for face recognition.

Yang Fails to Disclose Face Images, Same Camera Orientation, and Identifying Facial Features

Yang is directed to determining the rigid motion of the head (Models 4.1, pgs. 243-244) used in applications for human-computer interaction and eye-gaze correction for video conferencing (Abstract). Furthermore, Yang uses a vertical setup, which uses two digital video cameras mounted vertically, one on the top and the other on the bottom of the display screen (first column, page 243). Applicant brings to the Office's attention of a typo in Yang. For example, Yang states "not to add feature points in the non-rigid regions of the face, such as the month region" (Feature Regeneration 4.3, page 244). The word month should be [mouth] sic. Yang describes the features that are included as feature set as forehead, eyes, nose, and cheek region (Feature Regeneration 4.3, page 244).

First, Applicant asserts that Yang determines the rigid motion of the head (Models 4.1, pgs. 243-244). Yang tracks the head pose to warp a face image to generate a virtual view that preserves eye contact (Introduction, pg. 242). On the contrary, Applicant's Claim 1 is for a first face image of the face in a frontal position; and a second face image of the face moving in a yaw direction. These are not the same face images.

Second, Applicant submits that the camera orientations are not similar. Yang uses a vertical setup, which uses two digital video cameras mounted vertically, one on the top and the other on the bottom of the display screen (first column, page 243). While Applicant's Claim 1 discloses the first and second face images are pictures taken at substantially the same respective camera orientation. These are not similar camera setups.

Third, Applicant states Yang uses the images for human-computer interaction and eye-gaze correction for video conferencing (Abstract). In contrast, Applicant's Claim 1 is for identifying facial features for face recognition. These are not similar applications.

Thus, Yang does not disclose "*a first model for a first face image of the face in a frontal position; and a second model for a second face image of the face moving in a yaw direction, wherein the first and second face images are pictures taken at substantially the same respective camera orientation and identifying facial features for face recognition*", as recited in Claim 1. Consequently, Applicant respectfully submits that Claim 1 is not anticipated by Yang and requests that the §102 rejection be withdrawn.

Dependent claims 2-4, 6, and 12-13 depend directly or indirectly from independent Claim 1 and are allowable by virtue of this dependency. These claims are also allowable for their own recited features that, in combination with those recited in Claim 1, are not disclosed by Yang.

Furthermore, **dependent Claims 2-3** recite in part, “inner features comprise a nose, a mouth” and “a plurality of mouth corners corresponding to the mouth”, respectively. Yang does not disclose these features, but teaches away from using the mouth as a feature. In particular, Yang states “not to add feature points in the non-rigid regions of the face, such as the mouth region” (Feature Regeneration 4.3, page 244). Therefore, these claims are not anticipated by Yang. Applicant respectfully request the §102 rejections be withdrawn.

Conclusion

Claims 1-55 are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of the subject application. If any issue remains unresolved that would prevent allowance of this case, the Office is requested to contact the undersigned attorney to resolve the issue.

Respectfully Submitted,

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